FAIRCHILD
A Schlumberger Company

MIL-STD-883
July 1986—Rev 2[5]

μA723QB Precision Voltage Regulator

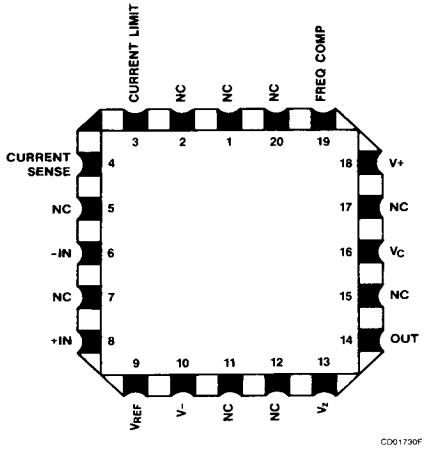
Aerospace and Defense Data Sheet
Linear Products

Description

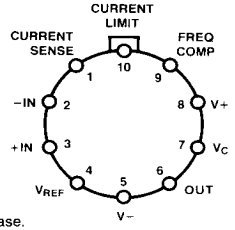
The μA723QB is a monolithic voltage regulator constructed using the Fairchild Planar Epitaxial process. The device consists of a temperature compensated reference amplifier, error amplifier, power series pass transistor and current-limit circuitry. Additional NPN or PNP pass elements may be used when output currents exceeding 150 mA are required. Provisions are made for adjustable current limiting and remote shutdown. In addition to the above, the device features low standby current drain, low temperature drift and high ripple rejection. The μA723QB is intended for use with positive or negative supplies as a series, shunt, switching, or floating regulator. Applications include laboratory power supplies, isolation regulators for low level data amplifiers, logic card regulators, small instrument power supplies, airborne systems, and other power supplies for digital and linear circuits.[6]

- **Positive Or Negative Supply Operation**
- **Series, Shunt, Switching, Or Floating Operation**
- **Low Line And Load Regulation**
- **Output Voltage Adjustable From 2 V To 37 V**
- **Output Current To 150 mA Without External Pass Transistor**

Connection Diagram 20-Terminal CCP (Top View)

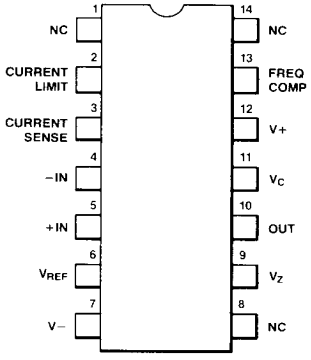


Connection Diagram 10-Lead Can (Top View)



Lead 5 connected to case.

Connection Diagram 14-Lead DIP (Top View)



Order Information

Part No.	Case/ Finish	Package Code Mil-M-38510, Appendix C
μA723DMQB	CA	D-1 14-Lead DIP
μA723HMQB	IC	A-2 10-Lead Can
μA723LMQB	2C	C-2 20-Terminal CtP
JAN Product Available		
10201	BCA	D-1 14-Lead DIP
10201	BCB	D-1 14-Lead DIP
10201	BIA	A-2 10-Lead Can
10201	BIC	A-2 10-Lead Can

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Absolute Maximum Ratings

Storage Temperature Range	−65°C to +175°C
Operating Temperature Range	−55°C to +125°C
Lead Temperature (soldering, 60 s)	300°C
Internal Power Dissipation[8]	
Can	350 mW
DIP and CCP	400 mW
Pulse Voltage from V+ to V−, (50 ms)	50 V
Continuous Voltage from V+ to V−	40 V
Input/Cutput Voltage Differential	40 V
Differential Input Voltage	±5 V
Voltage Between Non-Inverting Input and V−	8 V
Current from V_Z	25 mA
Current from V_{REF}	15 mA

Notes

1. 100% Test and Group A
2. Group A
3. Periodic tests, Group C
4. Guaranteed but not tested
5. When changes occur, FSC will make data sheet revisions available. Contact local sales representative for the latest revision.
6. For more information on device function, refer to the Fairchild Linear Data Book Commercial Section.
7. The line and load regulation specifications are given for the condition of constant chip temperature. Temperature drift effects must be taken into account separately for high dissipation conditions.
8. Rating applies to ambient temperatures up to 125°C. Above 125°C ambient, derate linearly at 140°C/W for the Can and 120°C/W for the DIP and CCP.

Processing: MIL-STD-883, Method 5004

Burn-In: Method 1015, Condition A, PDA calculated using Method 5005, Subgroup 1

Quality Conformance Inspection: MIL-STD-883, Method 5005

Group A Electrical Tests Subgroups:

1. Static tests at 25°C
2. Static tests at 125°C
3. Static tests at −55°C
4. Dynamic tests at 25°C

Group C and D Endpoints: Group A, Subgroup 1

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μA723QB

Electrical Characteristics $V_I = V+ = V_C \leqslant 12$ V, $V- = 0$ V, $V_O = 5.0$ V, $I_L = 1.0$ mA, $R_{SC} = 0\ \Omega$, C1 = 100 pF, $C_{REF} = 0\ \mu F$, unless otherwise specified.

Symbol	Characteristic	Condition	Min	Max	Unit	Note	Subgrp
V_{REF}	Reference Voltage		6.95	7.35	V	1	1,2,3
ΔV_{REF} (LOAD)	Reference Voltage Change With Load	$0\ mA \leqslant I_{REF} \leqslant 5.0$ mA		20	mV	1	1
V_{IR}	Input Voltage Range		9.5	40	V	1	1
V_{OR}	Output Voltage Range		2.0	37	V	1	1
$V_I - V_O$	Input/Output Voltage Diff.		3.0	38	V	1	1
V_Z	Zener Voltage	$I_Z = 1.0$ mA	5.8	7.2	V	1	1
$V_{R\ LINE}$	Line Regulation[7]	$12\ V \leqslant V_I \leqslant 15$ V		0.1	$\%V_O$	1	1
		$12\ V \leqslant V_I \leqslant 40$ V		0.2	$\%V_O$	1	1
		$12\ V \leqslant V_I \leqslant 15$ V		0.3	$\%V_O$	1	2,3
$V_{R\ LOAD}$	Load Regulation[7]	$1.0\ mA \leqslant I_L \leqslant 50$ mA		0.15	$\%V_O$	1	1
				0.6	$\%V_O$	1	2,3
$T_C\ V_O$	Average Temp. Coefficient of Output Voltage	$25°C \leqslant T_A \leqslant 125°C$	−0.010	+0.010	%/°C	4	2
		$-55°C \leqslant T_A \leqslant 25°C$	−0.015	+0.015	%/°C	4	3
I_{SCD}	Standby Current Drain	$V_I = 30$ V, $I_L = 0$ mA		3.5	mA	1	1
				4.0	mA	4	2
				2.4	mA	4	3
I_{OS}	Output Short Circuit Current	$V_O = 0$ V, $R_{SC} = 10\ \Omega$	45	85	mA	4	1
$\Delta V_I/\Delta V_O$	Ripple Rejection	f = 10 kHz, $C_{REF} = 0\ \mu F$	64		dB	3	4
		f = 10 kHz, $C_{REF} = 5.0\ \mu F$	76		dB	3	4
N_O	Noise	100 Hz ⩽ f ⩽ 10 kHz, $C_{REF} = 0\ \mu F$		120	μV_{rms}	3	4
		100 Hz ⩽ f ⩽ 10 kHz, $C_{REF} = 5.0\ \mu F$		7.0	μV_{rms}	3	4
$\Delta V_O/\Delta V_I$	Line Transient Response	$\Delta V_I = 3.0$ V		10	mV/V	3	4
$\Delta V_O/\Delta I_L$	Load Transient Response	$I_L = 40$ mA, $\Delta I_L = 10$ mA	−1.5		mV/mA	3	4

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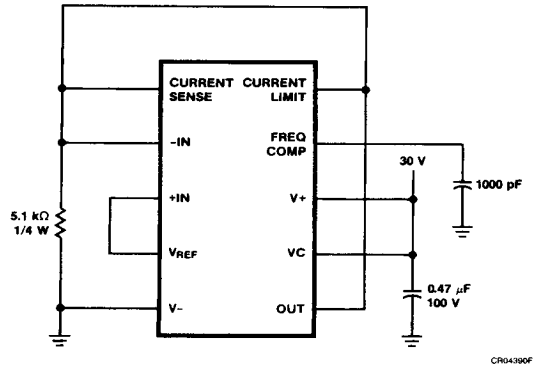
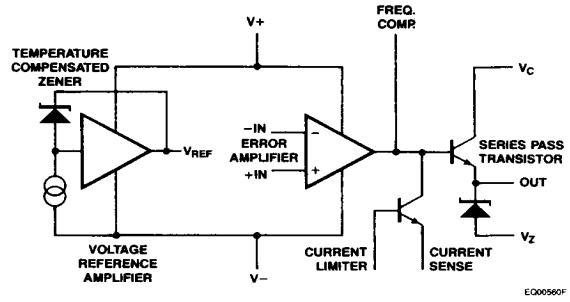
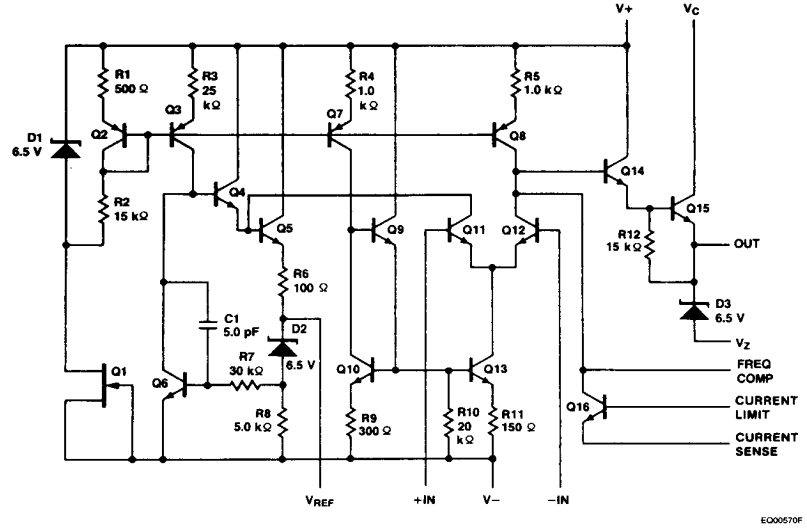
Primary Burn-In Circuit
(38510/10201 may be used by FSC as an alternate)



Block Diagram



Equivalent Circuit



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